IHRA BIOMECHANICS MEETING MINUTES HELD IN LYON, JULY 9-12, 2002

ATTENDANCE:

Rolf Eppinger	Chairman, NHTSA
Dominique Cesari	INRETS/ EU/EEVC
Kashiro Ono	JMOT/ JARI/ Japan
Suzanne Tylko	TC
Michiel Van Ratingen	TNO/ EEVC
Farid Bendjellal	OICA Europe

1 AGENDA

- Adopted with addition of future meeting dates.

2 REVIEW OF MINUTES

- Minutes of March, 2002 were adopted with correction of the affiliation for Mr. Ono.

3 REPORT TO STEERING COMMITTEE (MAY 9, 2002)

Presented the membership, mission & objective, scope, action plan etc. (doc #)

3.1 Side Impact Interim Report presented

3.2 Crash test dummy evaluation; two fundamental tasks described. Flow diagram used to highlight association between human response and dummy biofidelity. Methods being considered for ranking biofidelity were also presented.

3.3 Work in progress towards determining injury criteria was presented.

3.4 Conclusion: Steering committee stressed the importance of completing the side impact tasks. Frontal initiatives should then follow. The committee would like to see a white paper developed.

4 COMMUNICATIONS & DOCUMENTS

ACTION 1: The Chairman and Mr. Maltese will organize the website for the posting of all documents and meeting minutes.
ACTION 2: Suzanne Tylko will provide an electronic copy of all previous minutes.

5 WorldSID Report

5.1 Completed European testing, the dummy will next go to Japan via FTSSS Europe

5.2 Anticipated changes to the pelvis (substitution of the 6 axis pubic load cell with a single axis load cell), thigh mass distribution, shoulder modifications and some minor neck adjustments.

5.3 Design freeze expected in the early fall

5.4 MIRA coordinating extensive test matrix beginning January 2003 for the evaluation of the first production WorldSID. Europe is focussing on non-biofidelity testing, in-vehicle testing. MIRA sled has successfully reproduced in-vehicle crash dummy responses.

6 IHRA Side Impact

Resolution on MDB remains elusive. OOP will be based on the NHTSA/TC proposal; pole test will be based on current 201 (pole diameter still needs to be determined). Head-form test will be based on EEVC, issue of restrained vs. unrestrained remains.

6.1 The committee must be prepared to follow through with scaled values for the 5th female to provide biomechanical targets.

ACTION: Mr. van Ratingen will review available scaling techniques and report his findings at the next meeting.

7 IHRA COMPATIBILITY

7.1 Compatibility has merged with IHRA frontal.

7.2 No requests for IHRA Biomechanics at this time.

8 IHRA PS

8.1 Developing procedures to assess pedestrian protection and will require injury criteria for lower extremities; pelvis, femur, knee

8.2 Japanese requested IHRA PS (chairman is Mr. Mizuno) to provide head angle and trajectory measurements. JARI, NHTSA and Jack McLean conducted tests using a Madymo-based programme to determine the velocity and trajectory of the head. These tests were conducted as part of a round robin series. Results are conflicting and non-conclusive as there is too much scatter at present.

9 FID COMMITTEE UPDATE (DOC # MEETING #--)

9.1 Review of European frontal directive

9.2 Organization:

a) Frontal accident analysis
b) Acquisition of new PMHS data
c) Definition of new requirements through the evaluation of existing frontal dummies.

9.3 PROGRESS:

THOR face and neck assessment results: There are biofidelity issues with the HIII, THOR shows potential but still needs improvements
THOR Alpha tests delayed due to dummy delivery (INRETS & TRL have each purchased a THOR but lower leg has been delayed)
Program has been significantly delayed due to durability issues.
European proposal is in line with US with only a few exceptions
Upgrades are focussed on durability prior to recommendation for regulatory use. Modifications to incorporate the WorldSID data acquisition system are being considered

ACTION: Mr. van Ratingen will prepare a list of deviations between EEVC and NHTSA specifications

10 DEVELOPMENT OF BIOFIDELITY CORRIDORS

10.1 Minimization of variance

Not feasible due to computational requirements
Suggestion is to visually check data to obtain most reasonable plot and limit the number of options, then shift other responses accordingly.

ACTION: Chairman will prepare a summary document explaining and supporting the proposed minimization of variance process

10.2 Prioritization of Dummy Biofidelity

Impact biofidelity (force time history)
Injury predictive biofidelity (depends on injury criteria)
The methods are described in the 2002 Stapp submission.

10.3 There is general support for the proposed method for constructing the corridors and the injury predictive methods described in pending Stapp paper.

Injury biofidelity will be based only on those responses deemed necessary & sufficient for the determination of the injury criteria.

ACTION 1: The chairman will provide a summary of the two papers for inclusion as chapters in the committee document.

ACTION 2: Mr. van Ratingen will obtain the relevant EEVC corridors, adopted by the WG and covert them to a compatible format.

ACTION 3: Mr. Dalmotas will update the injury database to include the relative importance of injury severities by body regions. New data from Japan will be included, Europe (CCIS) Paul Fay (leader of accident team @ Ford UK pfay@ford.com

ACTION 4: Mr. Bendjellal has sent a request to Mr Fay for CCIS data.

10.4 The new data recommended for inclusion for the development of the revised biofidelity corridors is now described in the 2002 NHTSA Stapp paper (Maltese)

10.5 There are no published studies of side impact femur injury risk. What is the feasibility of using numerical modelling to develop femur corridors? Experimental data is used to validate the frontal models. Mr. Van Ratingen reports that as soon as you deviate from the conditions for which the models have been derived the results become questionable.

ACTION: Mr. Bendjellal will discuss modelling opportunities with Xavier Troseille and report back to the WG.

11 PRESENTATION BY SABINE COMPIGNE ON SHOULDER BIOMECHANICAL DATA ANALYSIS

2 PMHS tests have been completed, matrix to include 27 tests on 5 PMHS

Non injurious tests and injurious carried out at 1m/s and 6 m/s respectively.

12 INJURY CRITERIA

The development of new injury criteria is beyond the scope of this WG. Mr. Cesari would like to examine the existing injury criteria (published data) and comment on the limitations, identify the required instrumentation and from this develop injury risk curves for the body regions identified as being important.
FAA is sponsoring a study to examine the tolerance limit of the neck in side facing seats, some of this data may be of assistance
Mr. Bendjellal suggested that the WG consider referring to the work of WG6

ACTION: Mr. Cesari will assume responsibility for the co-ordination of the portion of the document describing the injury risk curves. A draft will be presented at the IRCOBI meeting. Members are requested to provide input to Mr. Cesari.

13 FUTURE MEETINGS

September 20 on the final afternoon -IRCOBI MUNICH
November 13 & 14 Stapp
IHRA side is September 16-17

14 MEETING ADJOURNED.